

NOTES

1. INSTALL AVIATION TAPE EVERY 18 in OR AS NECESSARY ON ALL TUBE ASSEMBLIES

SHEET	REV	ECO	DATE	DESCRIPTION	BY	CHK	APR
1-9	A		01/03/97	MODIFIED -4,-5,-6,-8,-11 ASSY	REB	REB	REB
1,3	B		02/21/97	ES39500-1 REMOVED FROM -7 ASSY	REB	REB	REB
1,6-9	C		06/17/97	ES39501 WAS S-5018, MOD'F ANGLES ON -5 ASSY, REMOVED S-5018 ON -13	REB	REB	REB
1,3	D		12/22/97	CHANGE LENGTH OF -7 TUBE ASSY, TD 4.25"	REB	REB	REB
1,10	E		12/10/99	ADDED SHT 10 & 11, ASSY. -14,-15,-16	MR	LS	MR
1,10,11	F		08/19/05	17.75 WAS 19.00, -14 TUBE ASSY, ADDED -17, -18 TUBE ASSY'S	REB	LS	REB
1-11	G	07/05/07	ADDED BEND TABLES TO -3/-4/-5/-6/-9/-10/-14/-16. ADDED FIRESLEEVE CALLOUTS TO -4/-5/-16. BEND RADII WAS 1.5" ON -6/-9/-10/-11/-12.				
			-3 ASSY: 15.62 WAS 15.75 (TO BEND 4), ADDED DIMS 10.96, 1.26. -4 ASSY: DIM 3.02 WAS 2.77, REMOVED 3° BEND, 169° WAS 166°. -5 ASSY: ASSIGNED BENDS 1,2,3, ADDED TUBE ROTATION VIEW. -6/-11 ASSY's: LENGTH DIMS WERE TD END OF BENDS.				
			-9 ASSY: ADDED DIMS 11.38, 2.58, 1.28, & 10.76. -10 ASSY: ADDED DIMS 13.56(REF), 6.54, 6.02, 12.62(REF) WAS 12.13(REF), 1.77 WAS 1.25. -12 ASSY: 1.34 WAS 1.19, 10.40 WAS 10.25.				REB
			-14 ASSY: ADDED DIMS 23.87, 4.57, 2.91, 49.86(REF), 17.62 WAS 17.75 (TO 4) -16 ASSY: 2.69 WAS 2.77, 4.71(REF) WAS 4.75(REF), ADDED SEGMENT LENGTHS, FRACTIONAL (ft. & inches) TUBE LENGTHS. ADDED 304SS & 5052-0 TO BOM.				LS
			DEFINED AVIATION TAPE NOTE AS NOTE 1. CRCT'N BH-9 WAS BH-7 AND REPLACED FERRULE, NUT, & SLEEVE ON -5 FIGURE ONLY.				REB
			REMOVED ES39500-1 FERRULE FROM ITEM -15 ASSY				CEH
1, 6-8	H		05/26/20	P/N ES39501-1 UPDATED TO ES39500-2. 32° DIM ON -9 ASSY NOW 30.5°	DT	LS	ZA
1, 12	J		03/23/21	ADDED SHEET 12 AND ASSEMBLY S-5017-19. UPDATED FIRE SLEEVE LENGTHS ON -7, -11, -10, -12, AND -14.	DT	LS	ZA
ALL	K		02/21/22	MOVED BOM TO NEW SHEET 2. INCREMENTED SUBSEQUENT PAGES. ADDED ALTERNATE SLEEVE AND NUT P/NS.	DT	ZP	DA

-CONFIDENTIAL INFORMATION-

BREAK ALL SHARP EDGES

Paravion® Technology Inc.	TITLE			DRAWING NO.		
	TUBE ASSEMBLY			S-5017		
DIMENSIONS IN INCHES						
TOLERANCES EXCEPT WHERE NOTED:						
.X = ± .1	.XX = ± .05	.XXX = ± .010				
ANGLES = ± 1°					SHEET	
DO NOT SCALE DRAWING						
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1 OF 13						

			10.4	3.75				4.00	12.3	20.6	16.0	30.9	13.9		4.25	16.2	45.4	15.8			5052-0	TUBE: 1/2 X .035W SEAMLESS (QTY IN INCHES)	WW-T-700/4
																					5052-0	TUBE: 3/8 X .035W SEAMLESS (QTY IN INCHES)	WW-T-700/4
																					304SS	TUBE: 5/8 X .035W SEAMLESS (QTY IN INCHES)	ASTM-A269-92
52.55	6.33	16.2			50.9																304SS	TUBE: 1/2 X .035W SEAMLESS (QTY IN INCHES)	ASTM-A269-92
16		4	3	3	16	4	4	4	4	8	4	4	4	16	4	8	4	4	14.7	ES82100-1	AVIATION TAPE (QTY IN INCHES)	(SEE NOTE 1)	
53.5		16	9	3.75	49.5							3.25	15	45	14	35	14.5	14.5	14.5		BH-9	FIRE SLEEVE (QTY IN INCHES)	
								4	11.5	20	15.25	30.5	13.5							BH-7	FIRE SLEEVE (QTY IN INCHES)		
																				2	AN819-10J	SLEEVE (ALT: MS20819-10J, AS5176J10)	
																				2	AN818-10J	NUT (ALT: AS5175J10)	
2	2	2			2															2	AN819-8J	SLEEVE (ALT: MS20819-8J, AS5176J08)	
2	2	2			2															2	AN818-8J	NUT (ALT: AS5175J08)	
			2																	2	AN819-8D	SLEEVE (ALT: MS20819-8D, AS3220D08)	
			2																	2	AN818-8D	NUT (AS5175W08, AN818-8W)	
			2																	2	AN819-6D	SLEEVE (ALT: MS20819-6D, AS3220D06)	
			2																	2	AN818-6D	NUT (ALT: AS5175W06, AN818-6W)	
			2																	2	ES39500-2	FERRULE	
2	2	2	2																	2	ES39500-1	FERRULE	
-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1		PART NO	DESCRIPTION	SPEC.	
ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY			Paravion® Technology	TITLE	
QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			TUBE ASSEMBLY	DRAWING NO.	S-5017

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TOLERANCES EXCEPT
WHERE NOTED:

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.XX = ± .05
.XXX = ± .010

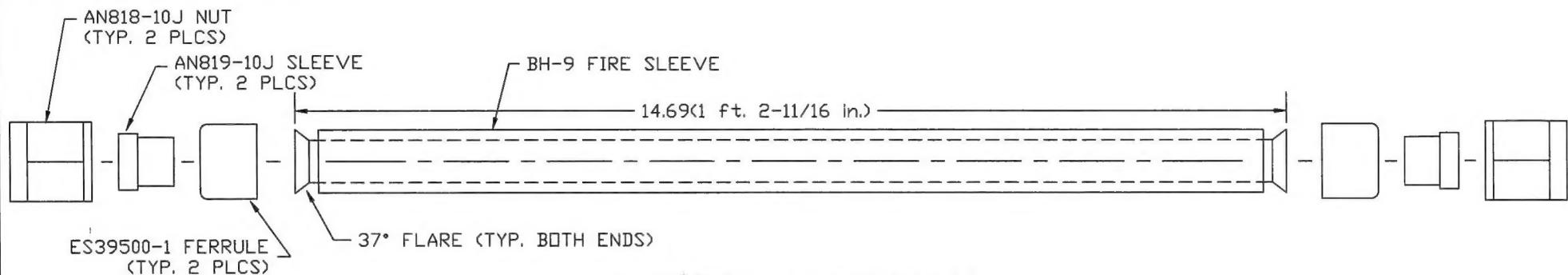
ANGLES = ± 1°

PROTO N/C DO NOT SCALE DRAWING

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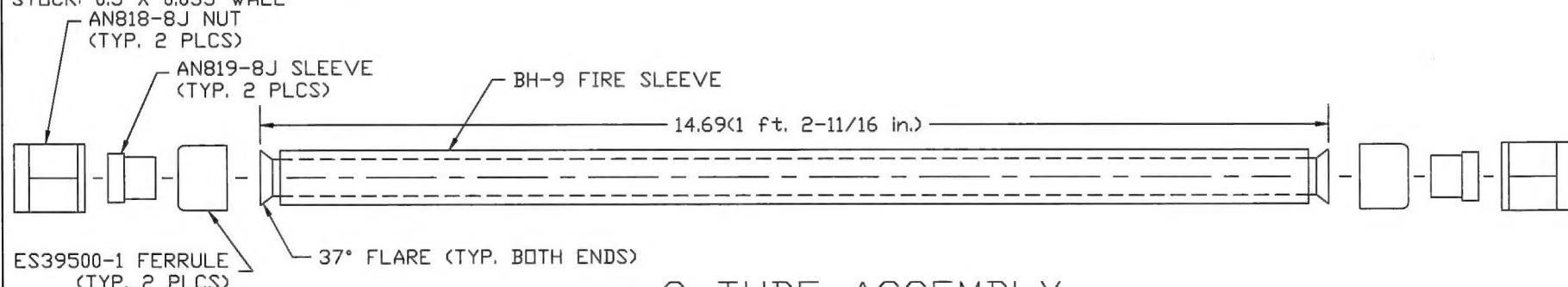
SHEET
2 OF 13

MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.625 X 0.035 WALL



-1 TUBE ASSEMBLY

MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.5 X 0.035 WALL

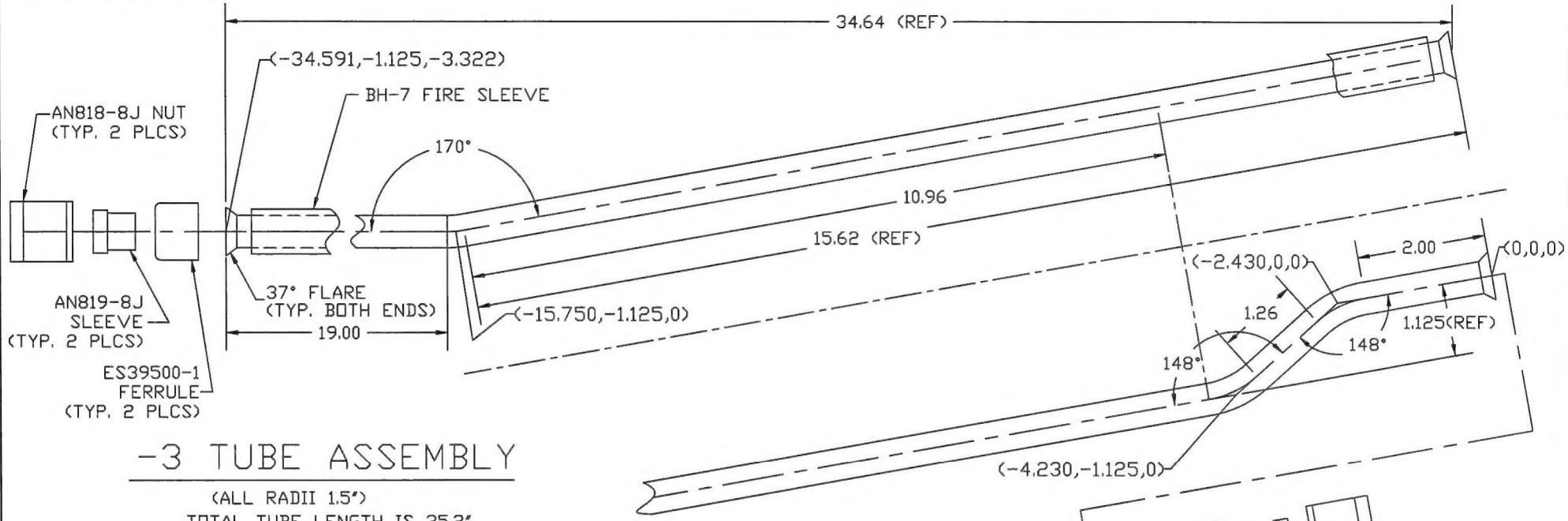


-2 TUBE ASSEMBLY

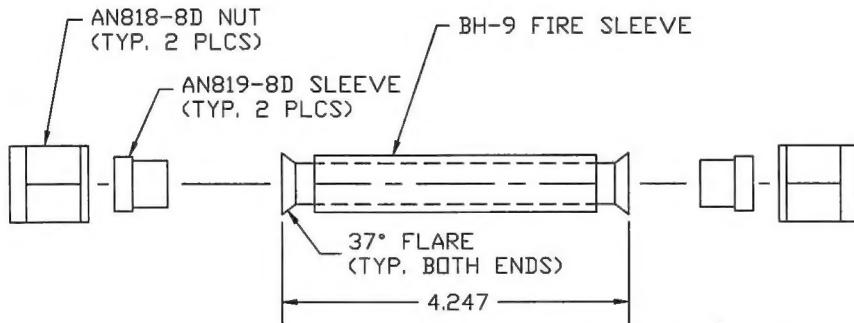
BREAK ALL SHARP EDGES

Paravion® Technology		TITLE		DRAWING NO.	
		TUBE ASSEMBLY		S-5017	
DIMENSIONS IN INCHES		DRAWN BY RHSM	APRVD. BY REB	CHK'D BY REB	DATE 11/26/96
TOLERANCES EXCEPT WHERE NOTED:					
PROTO	N/C				
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MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
 STOCK: 0.5 X 0.035 WALL



MATERIAL: 5052-0 WW-T-700/4
 STOCK: 0.5 X 0.035 WALL

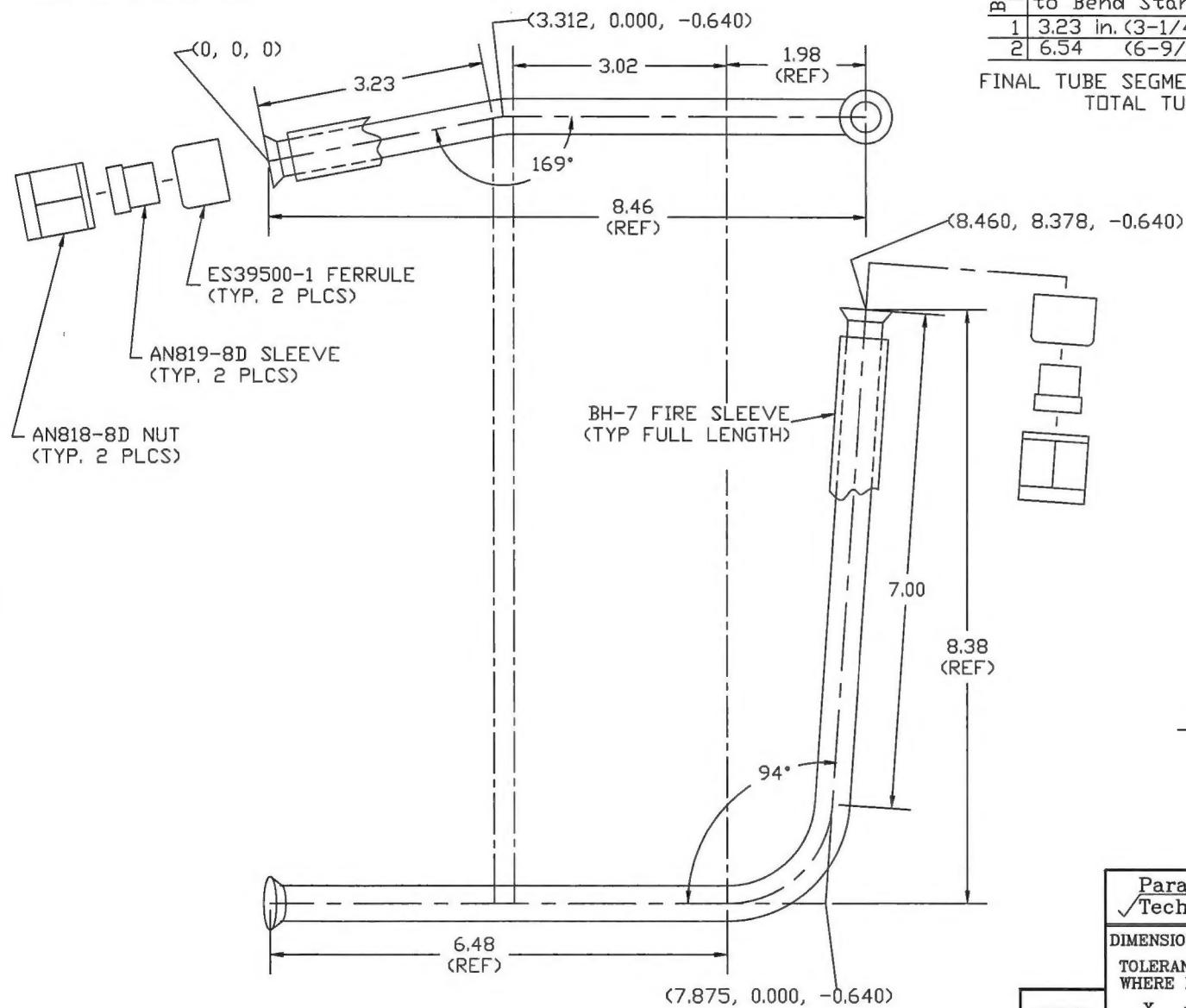


Bend No.	Tube Length to Bend Start	Tangent Angle Setting, Deg.	Bend Angle, Deg.	Arc Length
1	2.00 (2in.)	0.0	32.0	0.84 inch
2	4.10 (4-1/8in.)	180.0	32.0	0.84
3	15.90 (1ft. 3-7/8in.)	90.0	10.0	0.26

FINAL TUBE SEGMENT LENGTH = 19.00 inches (1ft. 7in.)
 TOTAL TUBE LENGTH = 35.16 inches (2ft. 11-3/16in.)

Paravion® Technology	TITLE		DRAWING NO.					
	TUBE ASSEMBLY		S-5017					
DIMENSIONS IN INCHES								
TOLERANCES EXCEPT WHERE NOTED:								
.X	$\pm .1$							
.XX	$\pm .05$							
.XXX	$\pm .010$							
ANGLES = $\pm 1^\circ$								
PROTO	APRVD. BY	CHK'D. BY	DATE	REV ECO				
RHSM	REB	LS	11/26/96	K				
DO NOT SCALE DRAWING								
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N/C								

MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.5 X 0.035 WALL



Bend No	Tube Length to Bend Start	Tangent Angle Setting, Deg.	Bend Angle Deg.	Bend Radius	Arc Length
1	3.23 in. (3-1/4)	0.0	10.9	1.5 in.	0.29 in.
2	6.54 (6-9/16)	90.0	86.0	1.5 in.	2.25

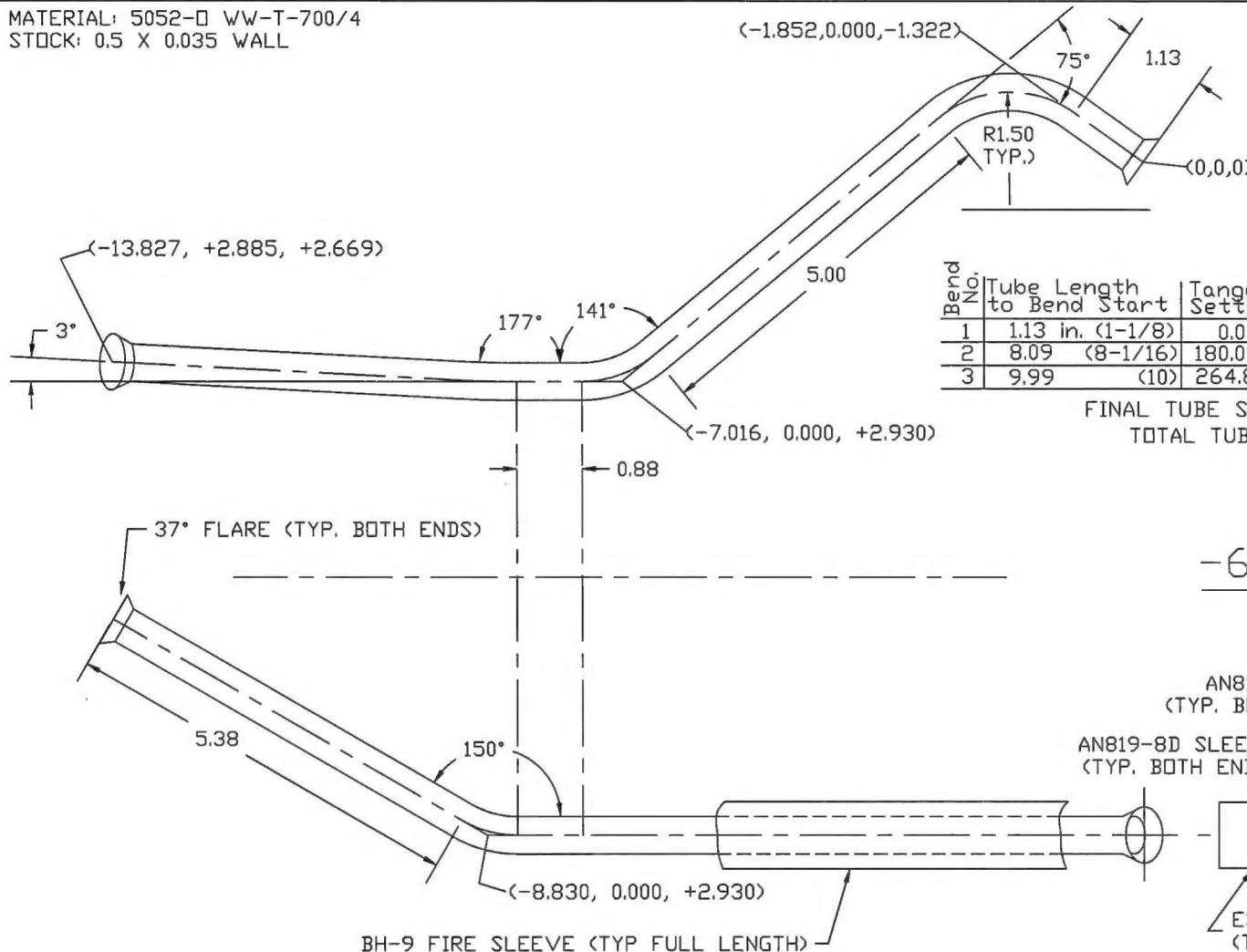
FINAL TUBE SEGMENT LENGTH = 7.00 inch
TOTAL TUBE LENGTH = 15.79 inches (1 ft. 3-13/16 in.)

-4 TUBE ASSEMBLY

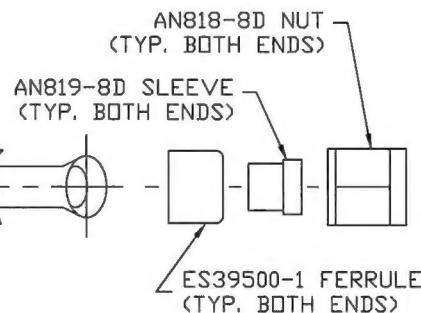
BREAK ALL SHARP EDGES

Paravion® Inc. Technology		TITLE		DRAWING NO.	
		TUBE ASSEMBLY		S-5017	
DIMENSIONS IN INCHES					
TOLERANCES EXCEPT WHERE NOTED:		DRAWN BY	APRVD. BY	CHK'D. BY	DATE
.X = ± .1		RHSM	REB	REB	11/26/96
.XX = ± .05					
.XXX = ± .010					
ANGLES = ± 1°		DO NOT SCALE DRAWING		SHEET	
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MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.5 X 0.035 WALL



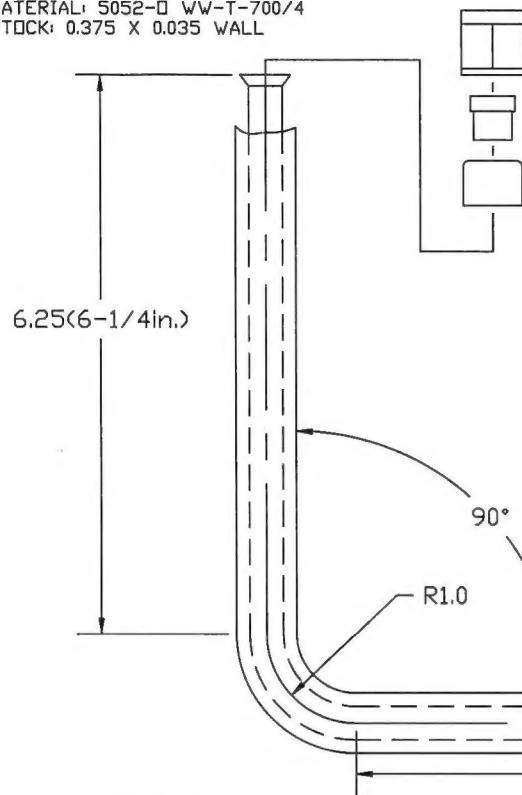
-6 TUBE ASSEMBLY



BREAK ALL SHARP EDGES

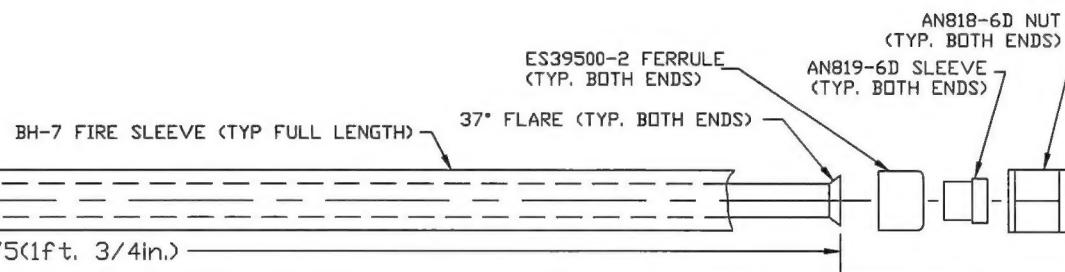
Paravion® Technology	TITLE		DRAWING NO.							
	TUBE ASSEMBLY		S-5017							
DIMENSIONS IN INCHES										
TOLERANCES EXCEPT WHERE NOTED:										
PROTO	.X	= ± .1	DRAWN BY	APRVD. BY						
	.XX	= ± .05								
N/C	.XXX	= ± .010	CHK'D BY	DATE						
	ANGLES = ± 1°									
DO NOT SCALE DRAWING										
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SHEET				6 OF 13						

MATERIAL: 5052-O WW-T-700/4
STOCK: 0.375 X 0.035 WALL

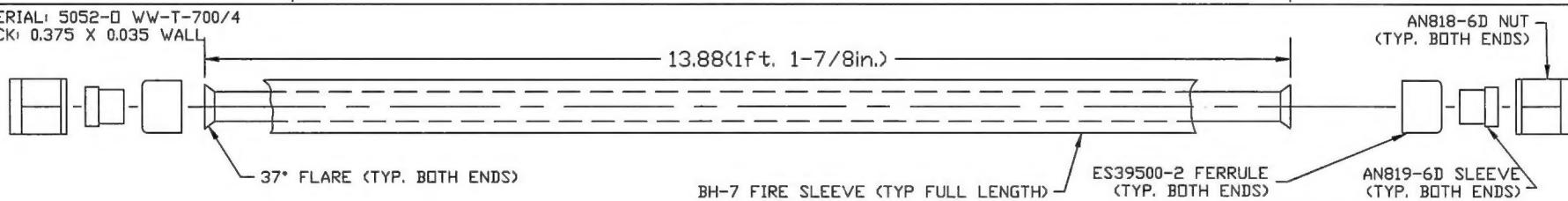


-11 TUBE ASSEMBLY

TOTAL TUBE LENGTH IS 20.6"



MATERIAL: 5052-O WW-T-700/4
STOCK: 0.375 X 0.035 WALL

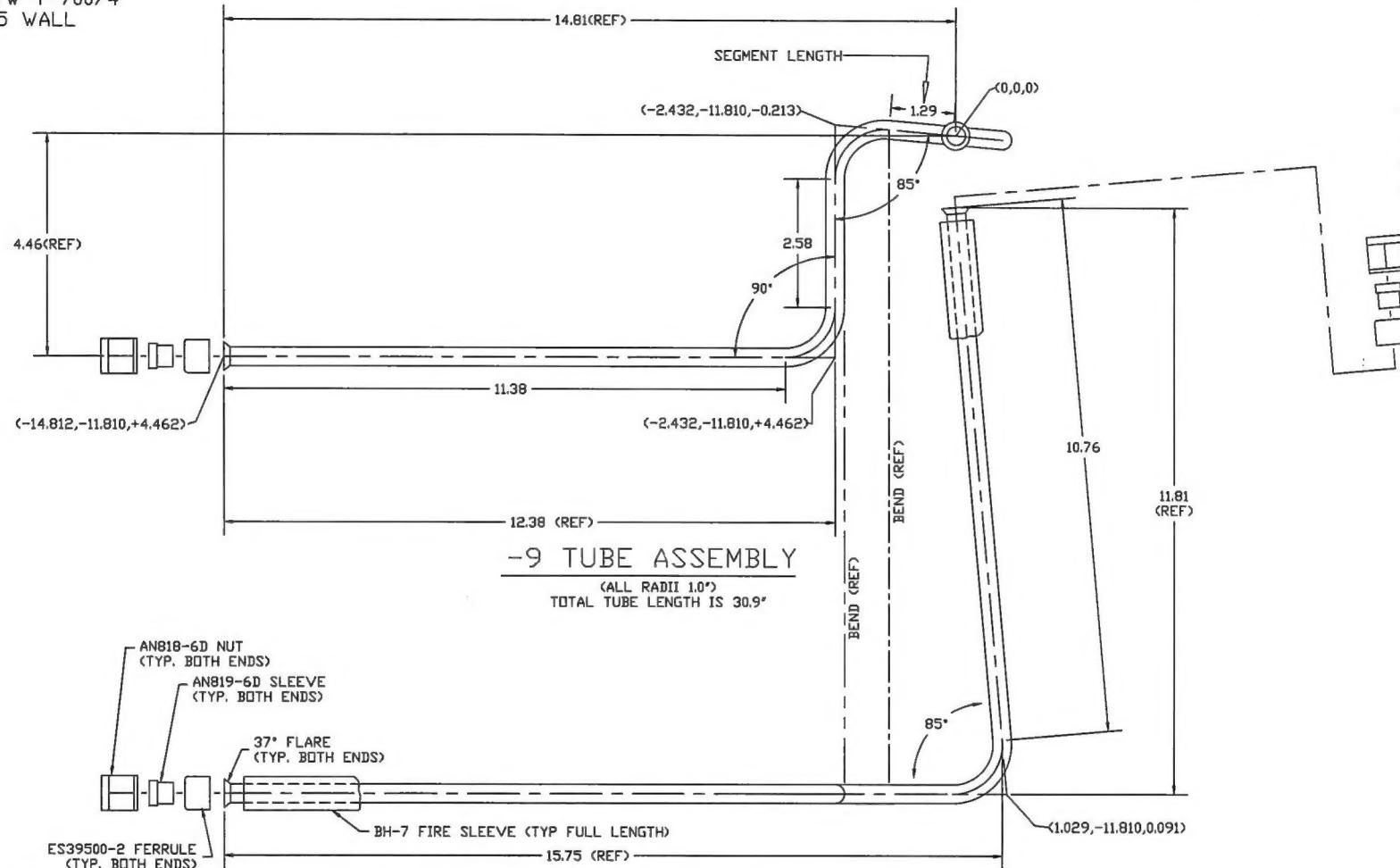


-8 TUBE ASSEMBLY

BREAK ALL SHARP EDGES

Paravion® Technology		TITLE		DRAWING NO.					
TUBE ASSEMBLY		S-5017							
DIMENSIONS IN INCHES									
TOLERANCES EXCEPT WHERE NOTED:									
.X	= ± .1	DRAWN BY	APRVD BY	CHK'D BY	DATE				
.XX	= ± .05	RHSM	REB	LS	11/26/96				
.XXX	= ± .010				REV				
ANGLES = ± 1°									
DO NOT SCALE DRAWING									
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SHEET 7 OF 13									

MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.375 X 0.035 WALL



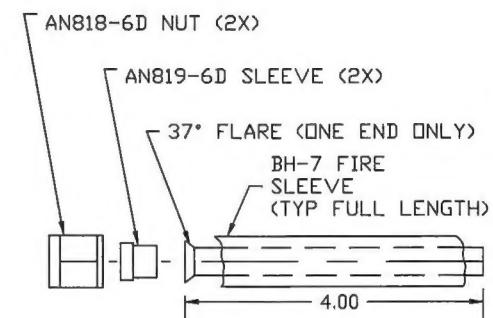
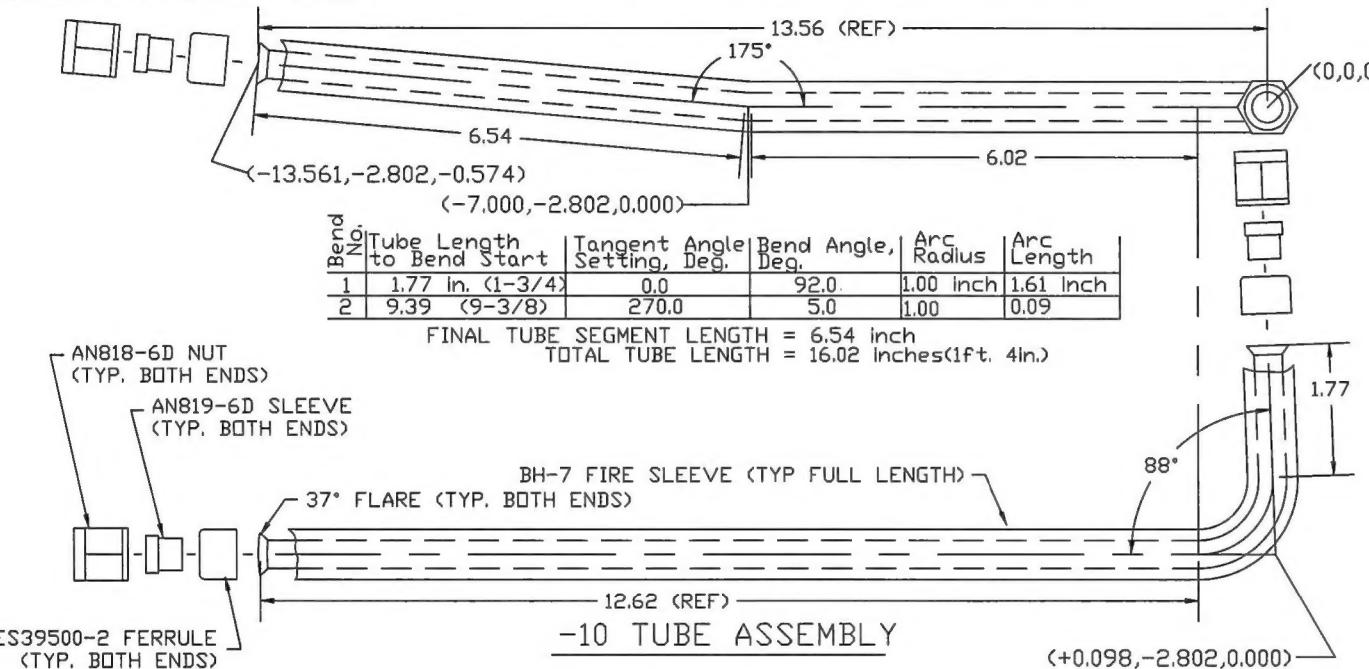
Bend	Tube Length to Bend Start	Tangent Angle Setting, Deg.	Bend Angle, Deg.	Arc Radius	Arc Length
1	10.76 in.(10-3/4in.)	0.0	95.0	1.00 inch	1.66 inch
2	13.71 (1ft. 1-11/16in.)	90.0	95.0	1.00	1.66
3	17.96 (1ft. 5-15/16in.)	270.0	90.0	1.00	1.57

FINAL TUBE SEGMENT LENGTH = 11.38 inch
TOTAL TUBE LENGTH = 30.91 inches

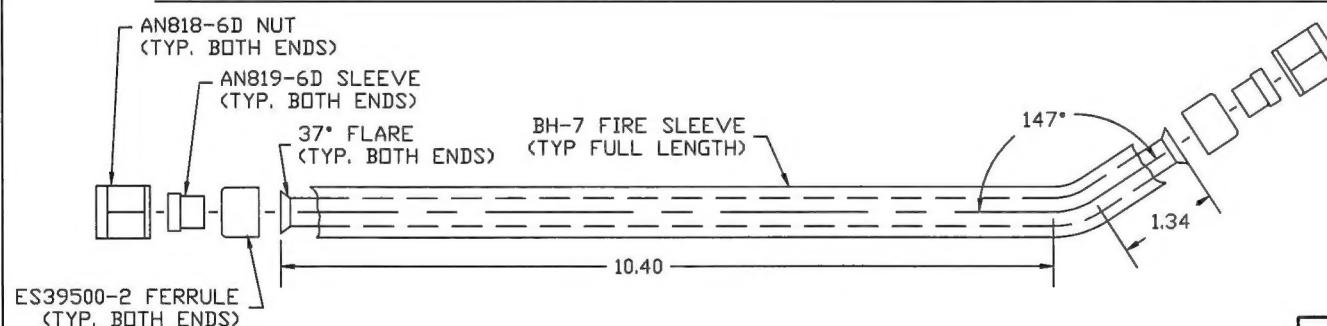
BREAK ALL SHARP EDGES

Paravion® Inc. Technology		TITLE		DRAWING NO.	
		TUBE ASSEMBLY		S-5017	
DIMENSIONS IN INCHES					
TOLERANCES EXCEPT WHERE NOTED:					
$.X = \pm .1$ $.XX = \pm .05$ $.XXX = \pm .010$ ANGLES = $\pm 1^\circ$					
PROTO		DRAWN BY RHSM		APRVD. BY REB	CHK'D BY LS
N/C					DATE 11/26/96
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SHEET 8 OF 13					

MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.375 X 0.035 WALL



-13 TUBE ASSEMBLY



-12 TUBE ASSEMBLY

(BEND RADIUS 1.0")
TOTAL TUBE LENGTH IS 12.3"

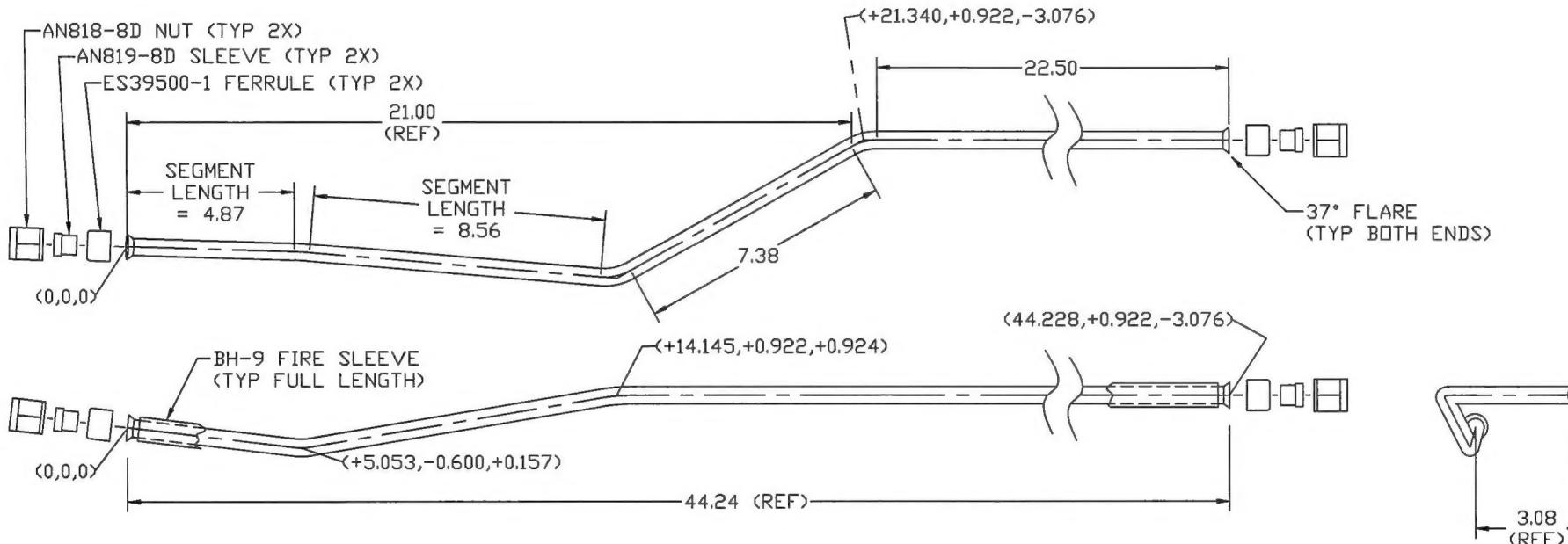
BREAK ALL SHARP EDGES

Paravion® Inc. Technology		TITLE		DRAWING NO.	
		TUBE ASSEMBLY		S-5017	
DIMENSIONS IN INCHES		DRAWN BY		APRVD. BY	CHK'D. BY
TOLERANCES EXCEPT WHERE NOTED:		RHSM	REB	LS	DATE
.X = ± .1					11/26/96
.XX = ± .05					REV
.XXX = ± .010					ECO
ANGLES = ± 1°					
DO NOT SCALE DRAWING					SHEET
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MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.5 X 0.035 WALL

Bend No	Tube Length to Bend Start	Tangent Angle Setting, Deg.	Bend Angle, Deg.	Arc Radius	Arc Length
1	4.87 in. (4-7/8in.)	0.0	16.5	1.50 inch	0.43 inch
2	13.87 (1ft. 1-7/8in.)	114.4	35.0	1.50	0.92
3	22.15 (1ft. 10-1/8in.)	277.8	29.1	1.50	0.76

FINAL TUBE SEGMENT LENGTH = 22.50 inches (1ft. 10-1/2in.)
TOTAL TUBE LENGTH = 45.41 inches (3ft. 9-1/2in.)

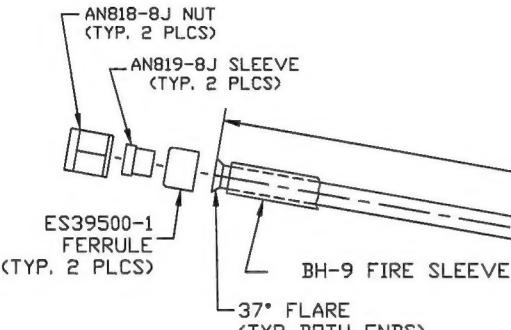


-5 TUBE ASSEMBLY

BREAK ALL SHARP EDGES

PROTO	Paravion® Technology Inc.			TITLE		DRAWING NO.								
	TUBE ASSEMBLY			S-5017										
DIMENSIONS IN INCHES														
TOLERANCES EXCEPT WHERE NOTED:														
RHSM	APRVD. REB	CHK'D. LS	DATE 11/26/96	REV K	ECO									
DO NOT SCALE DRAWING														
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N/C	ANGLES = ± 1°													

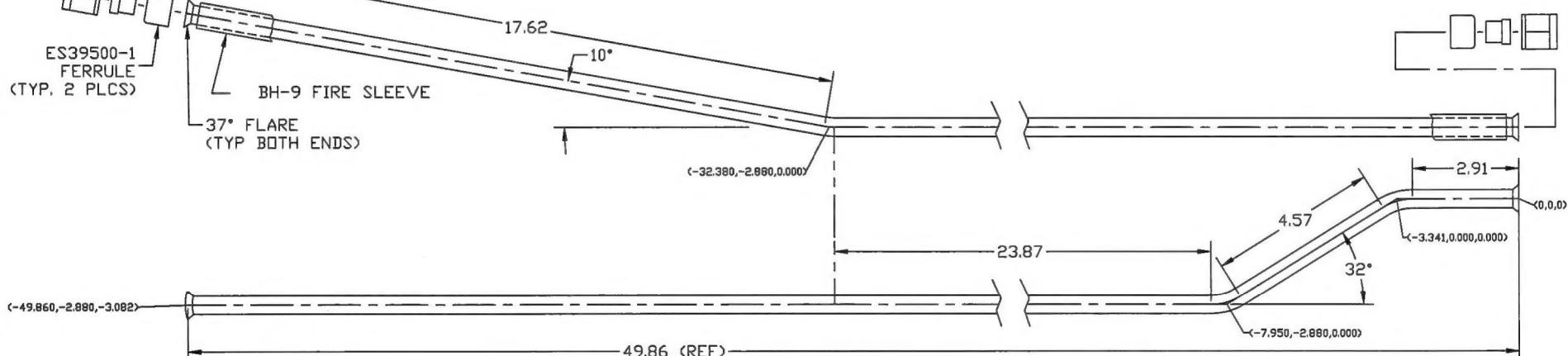
MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.5 X 0.035 WALL



Bend No	Tube Length to Bend Start	Tangent Angle Setting, Deg.	Bend Angle, Deg.	Arc Radius	Arc Length
1	2.91 in (2-15/16)	0.0	32.0	1.50 inch	0.84 inch
2	8.32 (8-5/16)	180.0	32.0	1.50	0.84
3	33.03 (2ft. 9in.)	90.0	10.0	1.50	0.26

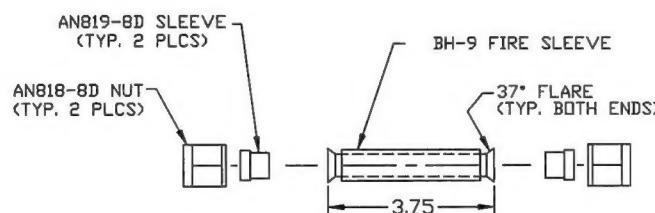
FINAL TUBE SEGMENT LENGTH = 17.62 inch (1ft. 5-5/8in.)

TOTAL TUBE LENGTH = 50.91 inch (4ft. 2-15/16in.)



-14 TUBE ASSEMBLY

MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.5 X 0.035 WALL



-15 TUBE ASSEMBLY

BREAK ALL SHARP EDGES

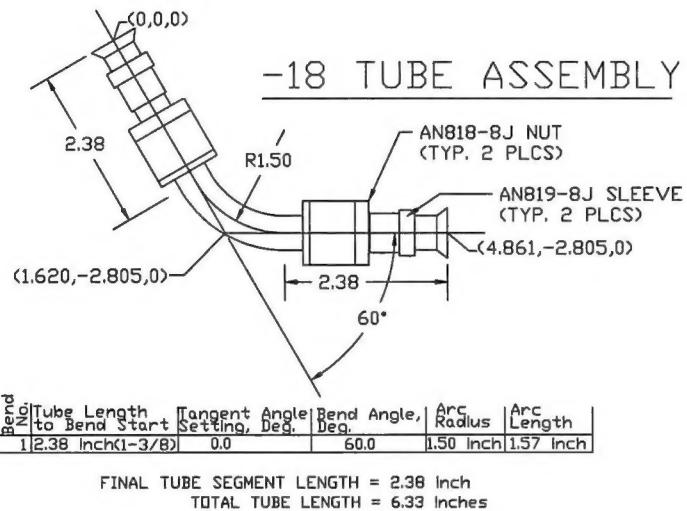
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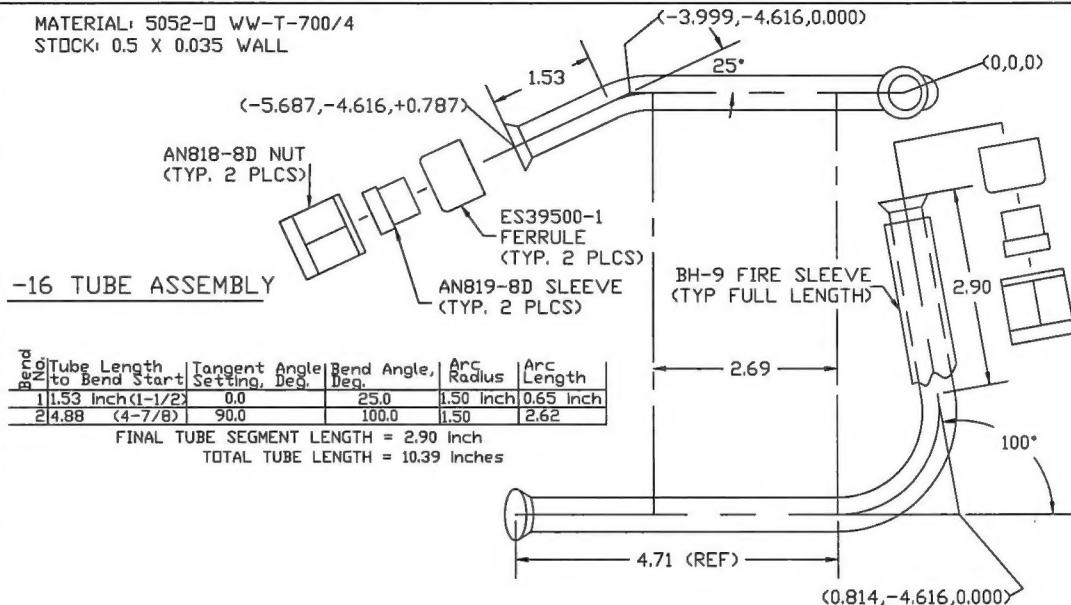
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		TUBE ASSEMBLY		S-5017					
DIMENSIONS IN INCHES									
TOLERANCES EXCEPT WHERE NOTED:									
.X	$\pm .1$								
.XX	$\pm .05$								
.XXX	$\pm .010$								
ANGLES = $\pm 1^\circ$									
DRAWN BY	APRVD BY	CHK'D BY	DATE	REV	ECO				
KRG	MR	LS	12/10/99	K					
DO NOT SCALE DRAWING									
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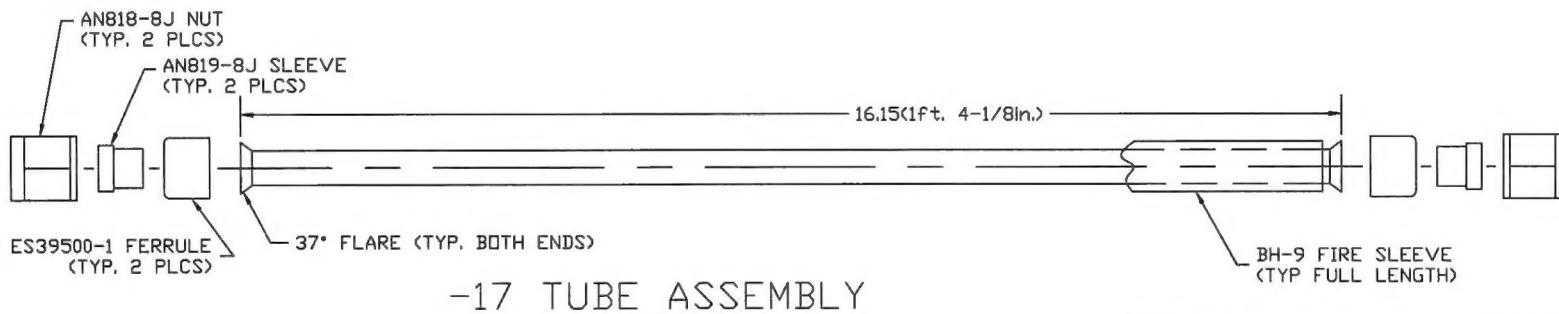
MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.5 X 0.035 WALL



MATERIAL: 5052-0 WW-T-700/4
STOCK: 0.5 X 0.035 WALL



MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.5 X 0.035 WALL



BREAK ALL SHARP EDGES

	TITLE		DRAWING NO.					
	TUBE ASSEMBLY		S-5017					
DIMENSIONS IN INCHES								
TOLERANCES EXCEPT WHERE NOTED:								
PROTO	DRAWN BY	APRVD. BY	CHK'D BY	DATE				
	RHSM	REB	REB	11/26/96				
N/C				REV K				
			DO NOT SCALE DRAWING	ECO				
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			PARAVION TECHNOLOGY, INC.					

MATERIAL: 304 STAINLESS STEEL ASTM-A269-92
STOCK: 0.5 X 0.035 WALL

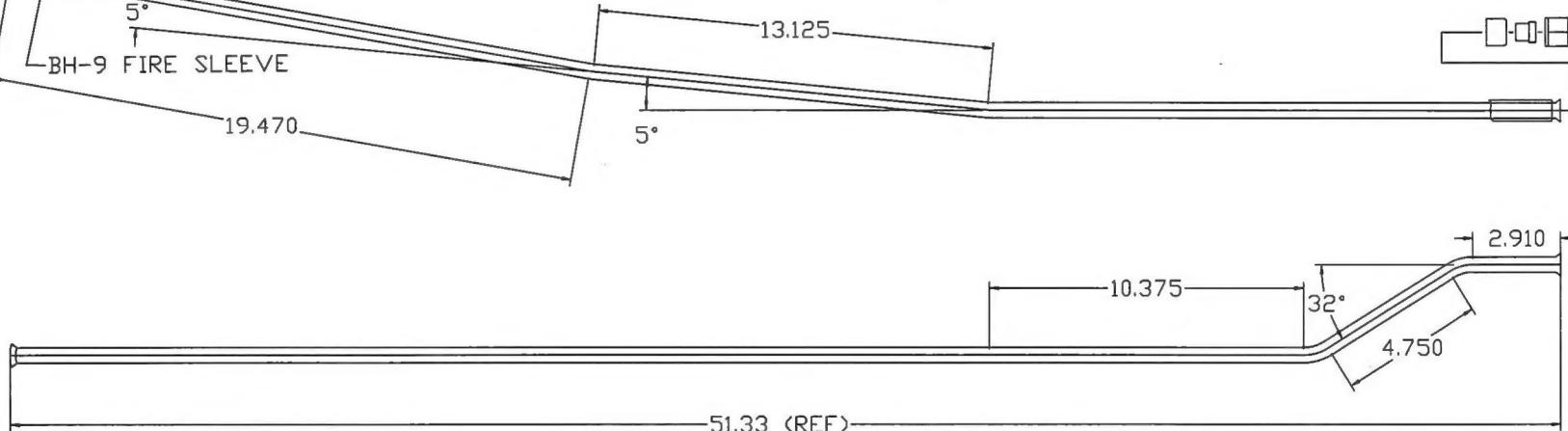
AN818-8J NUT
(TYP. 2 PLCS)
AN819-8J SLEEVE
(TYP. 2 PLCS)
ES39500-1
FERRULE
(TYP. 2
PLCS)
37° FLARE
(TYP BOTH ENDS)
BH-9 FIRE SLEEVE

19.470

Bend No.	Tube Length Bend to Bend	Relative Tangent Angle Setting, Deg.	Bend Angle, Deg.	Arc Radius	Arc Length
1	2.910 in.	0.0	32.0	1.50 inch	0.84 inch
2	4.750 in.	180.0	32.0	1.50	0.84
3	10.375 in.	90.0	5.0	1.50	0.13
4	13.125 in	0.0	5.0	1.50	0.13

FINAL TUBE SEGMENT LENGTH
AFTER LAST BEND = 19.470 in.

TOTAL TUBE LENGTH = 52.55 in. (4ft. 6-9/16in.)



-19 TUBE ASSEMBLY

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